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FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OH  
SUPERHIGH-PRESSURE MERCURY LAMPS OF THE TYPE DRSH TU 16-535.281--ETC(U)  
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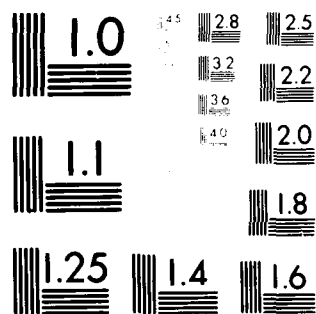
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MICROCOPY RESOLUTION TEST CHART  
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# FOREIGN TECHNOLOGY DIVISION



SUPERHIGH-PRESSURE MERCURY LAMPS OF THE TYPE  
DRSh TU 16-535.281-69



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**EDITED TRANSLATION**

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(6) SUPERHIGH-PRESSURE MERCURY LAMPS OF THE TYPE  
DRSh TU 16-535.281-69

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# U. S. BOARD ON GEOGRAPHIC NAMES transliteration SYSTEM

Block	Italic	Transliteration	Block	Italic	Transliteration
А а	<i>А а</i>	A, a	Р р	<i>Р р</i>	R, r
Б б	<i>Б б</i>	B, b	С с	<i>С с</i>	S, s
В в	<i>В в</i>	V, v	Т т	<i>Т т</i>	T, t
Г г	<i>Г г</i>	G, g	У у	<i>У у</i>	U, u
Д д	<i>Д д</i>	D, d	Ф ф	<i>Ф ф</i>	F, f
Е е	<i>Е е</i>	Ye, ye; E, e*	Х х	<i>Х х</i>	Kh, kh
Ж ж	<i>Ж ж</i>	Zh, zh	Ц ц	<i>Ц ц</i>	Ts, ts
З з	<i>З з</i>	Z, z	Ч ч	<i>Ч ч</i>	Ch, ch
И и	<i>И и</i>	I, i	Ш ш	<i>Ш ш</i>	Sh, sh
Й й	<i>Й й</i>	Y, y	Щ щ	<i>Щ щ</i>	Shch, shch
К к	<i>К к</i>	K, k	Ъ ъ	<i>Ъ ъ</i>	"
Л л	<i>Л л</i>	L, l	Ы ы	<i>Ы ы</i>	Y, y
М м	<i>М м</i>	M, m	Ь ь	<i>Ь ь</i>	'
Н н	<i>Н н</i>	N, n	Э э	<i>Э э</i>	E, e
О о	<i>О о</i>	O, o	Ю ю	<i>Ю ю</i>	Yu, yu
П п	<i>П п</i>	P, p	Я я	<i>Я я</i>	Ya, ya

\*ye initially, after vowels, and after Ъ, ь; e elsewhere.  
When written as ѣ in Russian, transliterate as yě or ě.

## RUSSIAN AND ENGLISH TRIGONOMETRIC FUNCTIONS

Russian	English	Russian	English	Russian	English
sin	sin	sh	sinh	arc sh	arsinh
cos	cos	ch	cosh	arc ch	arcosh
tg	tan	th	tanh	arc th	artanh
ctg	cot	cth	coth	arc cth	arcoth
sec	sec	sch	sech	arc sch	sech
cosec	csc	csch	csch	arc csch	csch

### Russian English

rot	curl
lg	log

**SUPERHIGH-PRESSURE MERCURY LAMPS  
OF THE TYPE DRSh TU 16-535.281-69  
Installation and Operating Instructions**

**1. Purpose and Lamp Construction**

Spherical mercury-quartz lamps of superhigh pressure are powerful concentrated sources of radiation in the visible and ultraviolet regions of the spectrum.

The lamps are intended for use in optical instruments and laboratory work.

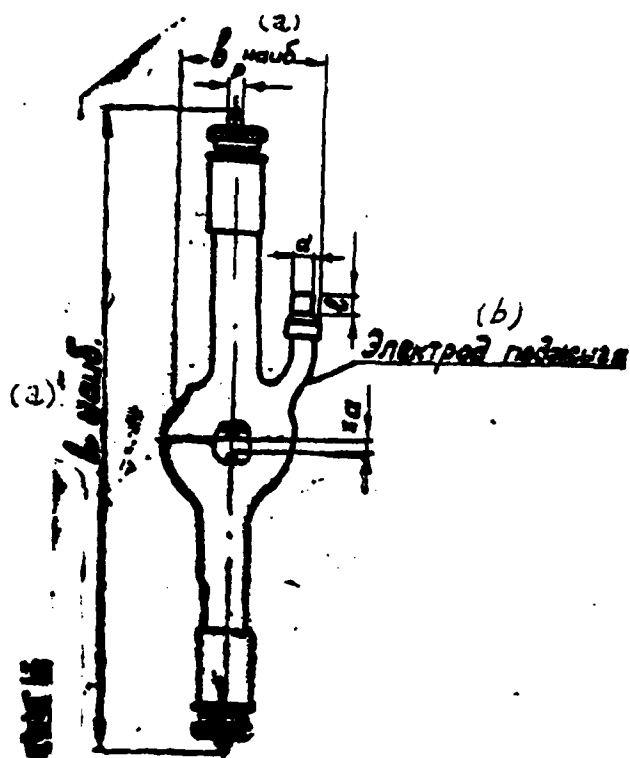
The drawing (Fig. 1) shows the construction and basic dimensions of these lamps.

Размеры в мм (a)	ДРШ 250-3 (b)	ДРШ 500М (b)
*L	145	150
a	20	40
h	10	45
*l	10	6
*d	7	6,5
p	M3	M3

KEY: (a) Dimensions, mm (b) DRSh

\*Reference size

Information for  
 NAME (NAME)  
 ADDRESS  
 PHONE NO.  
 DATE  
 TIME  
 BY  
 A



KEY: (a) max (b) Starting electrode

Fig. 1.

## II. Basic Electrical and Light Parameters of Lamps

When a lamp is connected to an electrical network (starting period), its electrical and light parameters change and then, after about 10-15 min, they acquire the values indicated in Table 1.

Table 1

Lamp type	Lamp capacity	Lamp voltage			Luminous flux		Brightness in center of discharge column
		rated	max	min	rated	min	
code	W	V			lm		Mnt
DRSh 250-3	250	72	87	57	12500	10,000	100
DRSh 500M	500	76	92	60	22500	18,000	130

### III. Connecting Lamp to a Network of Alternating Current

The lamps are designed to operate on an alternating current and are connected in sequence with a choke to the network with a voltage of 127 V for the DRSh 250-3 lamps and 220 V for the DRSh 500M lamps in accordance with a diagram shown in Fig. 2.

The lamps are ignited by means of an inductor with a spark length of 15–20 mm, activated by a button switch "K" for a brief period of time (not over 1 min). After an arc discharge develops between the current-carrying electrodes, the inductor cuts off.

The lead from the inductor is connected to the base of the starting electrode.

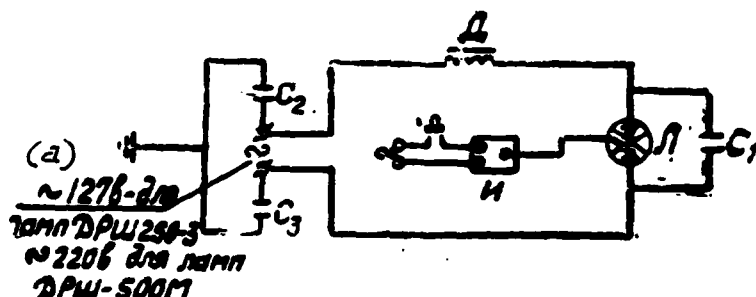


Fig. 2

Д - choke; Л - lamp; К - button switch; И - inductor for ignition with a spark length of 15–20 mm; C<sub>1</sub> - capacitor for shunting the tube with a capacity of 0.05  $\mu$ F for an operating voltage of at least 250 V; C<sub>2</sub> and C<sub>3</sub> - capacitors for blocking the network to the ground with a capacity of 0.5  $\mu$ F, for an operating voltage of at least 250 V.

KEY: (a) 127 V for the DRSh 250-3 lamps and 220 V for the DRSh-500M lamps.

### IV. Electrical Parameters of the Choke

Lamp	Operating Conditions		Starting Conditions	
	Choke voltage	Current strength	Choke voltage	Current strength
code	V	A	V	A
DRSh 250-3	93	4.0 $\pm$ 0.2	127	6.5–8.0
DRSh 500M	190	7.5 $\pm$ 0.3	220	9.0–11.0



## V. Radio Interferences

Just as most of the gas-discharge tubes, in the absence of appropriate protective means, superhigh-pressure mercury-quartz lamps can be a source of radio interferences.

To reduce the radio interferences caused by high-frequency radiation of the DRSh lamps, it is necessary to connect the capacitor  $C_1$  with a capacity of 0.05  $\mu\text{F}$  in parallel to the lamp (Fig. 2).

To limit the radio interferences of the network to which the lamps are connected, it is necessary to block the network, using the capacitors  $C_2$  and  $C_3$  with a capacity of 0.5  $\mu\text{F}$  each (Fig. 2). As a rule, these capacitors should be placed right next to the mounting with the lamps.

The housing of the mounting must be grounded and the electrical connections must ensure a reliable contact.

The blocking of the network, grounding of the mounting, and reliable contacts of electrical connections must be accomplished during the installation of the lamps by the consumer or the installation department, which are responsible directly to the State Radio Inspection for not adhering to the recommended measures for reducing radio interferences, according to the regulations in effect.

## VI. Operating Conditions

Normal operating position of a lamp is vertical - the starting electrode is on top (maximum permissible deviation from vertical position is  $10^\circ$ ).

The lamp is attached to the mounts or bases of the current-carrying electrodes.

Normal ignition and build-up of a lamp occurs at a temperature of the ambient air not lower than  $+15^\circ\text{C}$  and at a voltage of the network not lower than 115 V for the DRSh 250-3 lamps and 200 V for the DRSh 500 M lamps.

The lamp can operate in a confined space (housing), provided that the dimensions of the housing and its conditional ventilation are such that the air temperature does not exceed  $250^\circ\text{C}$  at 6 cm from the sides (under stabilized conditions). After the lamp is shut off, it can be re-ignited again after 6 min.

The quartz glass of the bulb of the lamp easily loses its transparency when its surface is soiled. In view of this fact, when the bulb gets soiled (for example, when it is handled by hands, when it gets dusty, etc.), it is necessary to wipe it with cotton wetted with alcohol before the ignition.

#### **VII. Safety Measures to be Observed when Working with the Lamp**

Protective measures must be taken to protect the personnel, equipment, and combustible material close to the lamp in case it explodes.

Personnel working with the lamp must also be protected from the effect of strong ultraviolet radiation emitted by the lamp.